AMENDMENT

Amendments to the Claims

Please amend the claims to read as provided in the following listing:

1.-4. (Canceled)

5. (Currently amended) ~~The method of claim 4~~ A method of measuring continuity of a data set,

the method comprising:

obtaining a vector set from the data set;

combining vectors from the vector set to determine a representative vector for the vector set;

and

calculating a continuity measurement for the vector set, wherein the continuity measurement is

expressible as:

$$C = \frac{\sum_i \beta_i^2}{\sum_i E_i},$$

wherein C represents the continuity measurement, β_i represents the projection value for vector

i, E_i represents an energy of vector i, and i represents an index that ranges over the vector set.

6. (Canceled)

7. (Currently amended) ~~The method of claim 6~~ A method of measuring continuity of a data set,

the method comprising:

obtaining a vector set from the data set;

combining vectors from the vector set to determine a representative vector for the vector set;

and

Appl. No.:   10/608,734
Amdt. Dated April 22, 2005
Response To Office Action Of March 8, 2005

calculating a continuity measurement for the vector set, wherein the continuity measurement is

expressible as:

$$C = \frac{1}{N} \sum_{i=1}^{N} \frac{\beta_i^2}{E_i} \, ,$$

wherein C represents the continuity measurement, β_i represents the projection value for vector

i, E_i represents an energy of vector i, i represents an index that ranges over the vector set, and

N represents a number of vectors in the vector set.

8. (Currently amended) The method of ~~claim 1~~claim 7, wherein said combining vectors from the

vector set to determine a representative vector for the vector set includes:

summing the vectors in the vector set.

9. (Original) The method of claim 8, wherein said combining vectors from the vector set to

determine a representative vector from the vector set further includes:

dividing a sum of the vectors in the vector set to obtain an average vector.

10. (Currently amended) The method of ~~claim 1~~ claim 7, wherein said combining vectors from

the vector set to determine a representative vector for the vector set includes:

determining a weighted sum of the vectors in the vector set.

11. (Canceled)

12. (Currently amended) ~~The method of claim 11~~ A method of measuring continuity of a data

set, the method comprising:

obtaining a vector set from the data set;

combining vectors from the vector set to determine a representative vector for the vector set,

wherein said combining vectors includes determining the representative vector to be that

vector that minimizes a total distance measurement between the representative vector and

each of the vectors in the vector set, wherein the total distance measurement combines

Manhattan distance measurements from the representative vector to each of the vectors in the

vector set; and

calculating a continuity measurement for the vector set.

13. (Currently amended) ~~The method of claim 1~~ A method of measuring continuity of a data set,

the method comprising:

obtaining a vector set from the data set;

combining vectors from the vector set to determine a representative vector for the vector set,

wherein said combining vectors ~~from the vector set to determine a representative vector for~~

~~the vector set~~ includes[[:]] training a neural network on the vector set; and

calculating a continuity measurement for the vector set.

14. (Original) The method of claim 13, wherein the neural network is a single-neuron network

that iteratively updates a weight vector using a Hebbian-learning rule.

15.-26. (Canceled)

27. (Currently amended) ~~The method of claim 26~~ A method of measuring discontinuity of a data

set, the method comprising:

obtaining a vector set from the data set;

combining vectors from the vector set to determine a representative vector for the vector set;

Appl. No.:   10/608,734
Amdt. Dated April 22, 2005
Response To Office Action Of March 8, 2005

and

calculating a discontinuity measurement for the vector set, wherein the discontinuity

measurement is expressible as:

$$D = \frac{\sum_i \varepsilon_i^2}{\sum_i E_i},$$

wherein D represents the discontinuity measurement, ε_i represents the projection value for

vector i, E_i represents an energy of vector i, and i represents an index that ranges over the

vector set.

28. (Canceled)

29. (Currently amended) ~~The method of claim 28~~ A method of measuring discontinuity of a data

set, the method comprising:

obtaining a vector set from the data set;

combining vectors from the vector set to determine a representative vector for the vector set;

and

calculating a discontinuity measurement for the vector set, wherein the discontinuity

measurement is expressible as:

$$D = \frac{1}{N} \sum_{i=1}^{N} \frac{\varepsilon_i^2}{E_i},$$

wherein D represents the discontinuity measurement, ε_i represents the projection value for

vector i, E_i represents an energy of vector i, i represents an index that ranges over the vector

set, and N represents a number of vectors in the vector set.

30. (Currently amended) The method of ~~claim 23~~ claim 29, wherein said combining vectors from

the vector set to determine a representative vector for the vector set includes:

    summing the vectors in the vector set.

31. (Original) The method of claim 30, wherein said combining vectors from the vector set to

determine a representative vector from the vector set further includes:

    dividing a sum of the vectors in the vector set to obtain an average vector.

32. (Currently amended) The method of ~~claim 23~~claim 29, wherein said combining vectors from

the vector set to determine a representative vector for the vector set includes:

    determining a weighted sum of the vectors in the vector set.

33. (Canceled)

34. (Currently amended) ~~The method of claim 33~~ A method of measuring discontinuity of a data

set, the method comprising:

    obtaining a vector set from the data set;

    combining vectors from the vector set to determine a representative vector for the vector set,

        wherein said combining vectors includes determining the representative vector to be that

        vector that minimizes a total distance measurement between the representative vector and

        each of the vectors in the vector set, wherein the total distance measurement combines

        Manhattan distance measurements from the representative vector to each of the vectors in the

        vector set; and

    calculating a discontinuity measurement for the vector set.

35. (Currently amended) ~~The method of claim 23~~ A method of measuring discontinuity of a data

set, the method comprising:

obtaining a vector set from the data set;

combining vectors from the vector set to determine a representative vector for the vector set,

wherein said combining vectors ~~from the vector set to determine a representative vector for~~

~~the vector set~~ includes[[:]] training a neural network on the vector set; and

calculating a discontinuity measurement for the vector set.

36. (Original) The method of claim 35, wherein the neural network is a single-neuron network

that iteratively updates a weight vector using a Hebbian-learning rule.

37.-52. (Canceled)

53. (Currently amended) ~~The method of claim 52~~ A method of seismic exploration that

comprises:

detecting seismic energy with an array of detectors;

converting detection signals from the array of detectors into data representing one or more

attributes as a function of position for subsurface formations;

systematically obtaining subsets of the data as vector sets; and

for each vector set:

combining vectors from the vector set to determine a representative vector for the vector

set, wherein said combining vectors includes determining the representative vector to

be that vector that minimizes a total distance measurement between the representative

vector and each of the vectors in the vector set, wherein the total distance measurement

combines Manhattan distance measurements from the representative vector to each of

Appl. No.:   10/608,734
Amdt. Dated April 22, 2005
Response To Office Action Of March 8, 2005

the vectors in the vector set; and

calculating a continuity or discontinuity measurement with respect to the representative

vector.

54. (Currently amended) ~~The method of claim 45~~ A method of seismic exploration that

comprises:

detecting seismic energy with an array of detectors;

converting detection signals from the array of detectors into data representing one or more

attributes as a function of position for subsurface formations;

systematically obtaining subsets of the data as vector sets; and

for each vector set:

combining vectors from the vector set to determine a representative vector for the vector

set, wherein said combining vectors ~~from the vector set to determine a representative~~

~~vector for the vector set~~ includes[[:]] training a neural network on the vector set; and

calculating a continuity or discontinuity measurement with respect to the representative

vector.

55. (Original) The method of claim 54, wherein the neural network is a single-neuron network

that iteratively updates a weight vector using a Hebbian-learning rule.

56.-61. (Canceled)

62. (Currently amended) ~~The method of claim 56~~ A seismic survey system comprising:

a data storage device that stores seismic measurements; and

a processor that retrieves said seismic measurements as one or more vector sets and combines

vectors from at least one of the vector sets to determine a representative vector, wherein said

processor calculates a continuity or discontinuity measurement with respect to the

representative vector, and

wherein the processor combines vectors to determine the representative vector by training a

neural network on said at least one of the vector sets.

63. (Original) The system of claim 62, wherein the neural network is a single-neuron network

that iteratively updates a weight vector using a Hebbian-learning rule.

64.-65. (Canceled)